

REMARKS

Claims 16-22 and 24-30 are pending. Claims 1-15 and 23 have been previously canceled. Claims 16-19 are withdrawn from consideration as being drawn to a non-elected invention. Claims 20, 21, 24, 27, 28, and 30 have been rejected under 35 U.S.C. §102. Claims 22, 25, 26, and 29 have been rejected under 35 U.S.C. §103. Claim 20 has been amended, and support therefor is found in claim 20 as originally filed and at least in paragraph 43 of the substitute specification. Claim 31 is newly added, and support therefor is found in original claim 23. Claim 32 is also newly added, and support therefor is found in Figures 11c and 11f (renumbered from the original Figures 5c and 5f, respectively). Claims 20-22 and 24-32 remain for consideration upon entry of the present Amendment. No new matter has been added.

The Examiner has objected to the drawings indicating that Figures 12 and 14a should be designated by a legend such as – Prior Art –. Applicants herewith submit corrected drawings in compliance with 37 CFR §1.121(d) as required by the Examiner.

Claims 20, 21, 24, 27, 28, and 30 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 1,667,299 to Wildhaber (hereinafter “Wildhaber”). In view of the amendment to claim 20, the rejection is traversed and reconsideration is respectfully requested.

Wildhaber is directed to cutters for cutting longitudinally curved tooth gears. The cutter includes form cutting blades (form-ground cutting blades), each of which comprises a body portion 17 and a cutting portion 18. The cutting portion 18 comprises a front face 19, two side faces 20 that are longitudinally curved front to back, a back face 21, and an end or top face 22. The cutting portion 18 has a front rake that defines the front face 19 being inclined rearwardly from the end or top face 22 to the body portion 17. Two side cutting edges 24 are formed by the intersection of the front face 19 with the two side faces 20. An end cutting edge 25 is also formed by the intersection of the front face 19 and the end or top face 22. Each of the side cutting edges 24 is inclined rearwardly from the end cutting edge 25. Also, the side cutting faces are of helical form with reference to a rotary axis 14 of the cutter head. When assembled onto the cutter

head, the cutting edges lie in a plane that is inclined to the face of the cutter head. In use, each of the side cutting edges is alleged to take a clean, sharp cut. When several cutting blades are arranged on the cutter head, each cutting blade takes a finishing cut. A cutter having such blades “will preferably be employed as a finishing tool, operating upon a blank which has been previously roughed out, though, if desired, the cutter may be used to rough out and finish cut.”

Wildhaber fails to disclose, teach, or suggest a profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade wherein at least two clearance surfaces can be ground to provide profile-sharpening of the cutting blade, as is recited in claim 20. One difference between the profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade as recited in claim 20 and the form cutting blade of Wildhaber lies in the surfaces that are ground to sharpen the blade. Since on a form blade the profile must be retained after grinding the rake surface in a process of sharpening, the form of the clearance surfaces and the size of the clearance angles result perforce. Only two degrees of freedom are realized. In particular, the clearance angle at the head and the blade head nominal radius (or diameter) are predetermined, thereby necessarily determining the angles of the flank clearance surfaces and their forms and curvatures.

In a profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade, as recited in claim 20, at least two surfaces are ground in a sharpening operation. That is, the two clearance surfaces and possibly the rake surfaces are ground to sharpen the cutting edges and to provide a sharpened profile. On a form blade, as in Wildhaber, only the rake surface is reground, and one clearance surface is curved in a concave configuration while the other is curved in a convex configuration (as becomes apparent from Figure 5 of Wildhaber), thereby causing the forms of the clearance surfaces to be predetermined upon grinding of the rake surface. The advantage of the profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade, as recited in claim 20, is that freedom of choice of the clearance angles, the form of the clearance surfaces, and, in cases where the rake surface is also ground, the freedom of choice of the rake angle and the form of the rake surface can be realized. It is also

possible to regrind the blade (for example, by changing the pressure angle). Accordingly, the profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade as recited in claim 20 is new over the form blade of Wildhaber.

Furthermore, Wildhaber fails to disclose, teach, or suggest even a bar cutting blade. Additionally, the cutting blades of Wildhaber are form blades and not bar cutting blades because form blades are reground only on the rake surface thereof, namely, only in a direction transverse to the longitudinal direction of the form blade. The form blade according to Wildhaber essentially retains its length during a sharpening operation. In contrast, the profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade, as recited in claim 20, becomes shorter on each grinding operation. Shortening the cutting blade as recited in claim 20 is accommodated by the elongated configuration of the cutting blade.

Because Wildhaber fails to disclose, teach, or suggest a profile-sharpened or profile-sharpened and additionally form-ground bar cutting blade wherein at least two clearance surfaces can be ground to provide profile-sharpening of the cutting blade, as recited in claim 20, claim 20 is not anticipated by the Wildhaber reference. For at least this reason, claim 20 is allowable, and Applicants respectfully request that the Examiner withdraw the rejection of claim 20.

Dependent claims, by definition, further define the subject matter of the independent claims from which they depend. Because claims 21, 24, 27, 28, and 30 depend from claim 20, claims 21, 24, 27, 28, and 30 add recitations that further define the subject matter of independent claim 20. Because claim 20 is believed to be allowable for at least the reasons presented above, claims 21, 24, 27, 28, and 30 are therefore also believed to be allowable. Consequently, Applicants respectfully request that the rejections of claims 21, 24, 27, 28, and 30 be withdrawn.

Claim 22 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Wildhaber in view of U.S. Patent Publication No. 2001/0028831 to Iizuka et al. Claims 25 and 26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Wildhaber in view of U.S. Patent No. 5,944,587 to Stadtfeld. Claim 29 has been rejected

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under 35 U.S.C. §103(a) as being unpatentable over Wildhaber in view of U.S. Patent No. 3,760,476 to Kotthaus.

Because claims 22, 25, 26, and 29 depend from claim 20, and because claim 20 is asserted to be non-obvious for the reasons presented above, claims 22, 25, 26, and 29 are necessarily non-obvious. Applicants, therefore, respectfully submit that claims 22, 25, 26, and 29 are allowable. Accordingly, Applicants respectfully request that the rejections of claims 22, 25, 26, and 29 be withdrawn.

Applicants believe that the foregoing amendments and remarks are fully responsive to the Office Action and that the claims herein are allowable. An early action to that effect is earnestly solicited.

If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is invited to telephone the undersigned.

A fee in the amount of \$810.00 is enclosed for the filing of the RCE. If any additional charges are incurred with respect to this Amendment, they may be charged to Deposit Account No. 503342 maintained by Applicants' attorneys.

Respectfully submitted,

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